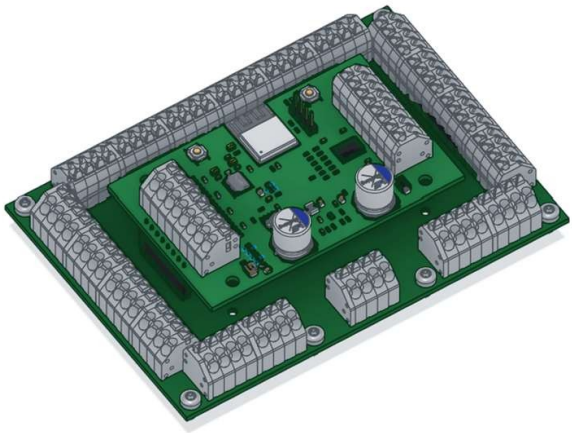
V ELECTRIC POWER

INSTALLATION MANUAL

VEC-xHUB

Multi-Unit Feeder Protection

Smart Load Sharing and Load Shedding for Row Homes and Condominiums



Multi-Unit Protection
Feeder monitoring for every suite

Fair Load Sharing
Automatic, suite-by-suite balancing

Scalable Design
Supports up to 18 VEC units

www.v-electric.com
Multi-Unit Feeder Protection System

Rev 1.00.2610.1
Revised November 11, 2026

Table of Contents

Disclaimer 3

Safety Warning 3

Description and Intended Use 4

How the System Works 5

Technical Specifications 7

Model Number 8

System Components and Hub Connections 8

Typical Installation Diagram 9

Installation Steps 11

- Step 1: Plan the Installation 11
- Step 2: Mount the VEC-xHUB 11
- Step 3: Install the Main CTs on the Feeder 11
- Step 4: Connect the Main CTs to the Hub 11
- Step 5: Run the Control Wires to Each Suite VEC 12
- Step 6: Power Up 12
- Step 7: Configure Each Suite VEC for Feeder Protection 12
- Step 8: Verify Operation 13

Commissioning Checklist 13

Troubleshooting 14

Warranty 14

Limitation of Liability 15

Disclaimer

While every precaution has been taken to ensure the accuracy of the contents of this guide, V Electric Power Inc. assumes no responsibility for errors or omissions. Please note that specifications and product functionality are subject to change without notice.

Safety Warning

> ***WARNING:*** *Read all instructions and warnings in this manual, and in the VEC Load Control and Feeder Protection Installation Manual, before starting installation. Improper installation can result in serious injury or death.*

- **Disconnect power** before performing any installation, maintenance, or servicing. Main feeder conductors in multi-unit buildings carry very high fault currents – work only on de-energized equipment.
- Installation and wiring must comply with the applicable electrical code (CEC in Canada or NEC in the USA) and all local regulations. Work must be performed by a certified technician.
- Do not install the device in hazardous locations or near flammable materials, fuels, or chemical vapours.
- Immediately stop using the unit if it is defective, broken, or damaged.
- Ensure all connections are properly torqued and all wires are securely tightened.
- If unsure, consult a qualified electrician or the manufacturer before proceeding.

Description and Intended Use

The **VEC-xHUB** is the central monitoring and communication unit of the VEC Multi-Unit Feeder Protection system. It provides intelligent load sharing and load shedding for **row homes, condominiums** and other installations where several suites share a common electrical feeder.

The VEC-xHUB measures the current on the shared main feeder or busbar using two external Main CTs and transmits the feeder-current signal to each participating VEC unit (one VEC unit is installed in each suite).

Each VEC unit continuously evaluates the shared feeder signal received from the VEC-xHUB, together with its own suite current measurements, and dynamically adjusts its allowable current limit accordingly. This protects the shared feeder against overload while distributing the available electrical capacity fairly among the connected suites.

Key Functions and Capabilities

When used in conjunction with connected VEC units, the VEC-xHUB system provides the following capabilities:

- Coordinates electrical demand across multiple dwelling units.
- Helps protect the shared feeder from overloading.
- Automatically restores controlled loads as feeder capacity becomes available.
- Supports up to **18 VEC units** in the standard configuration.

> ***Note:*** *The VEC-xHUB does not switch any loads itself. All current-limit adjustments, load-shedding decisions and load reconnection are performed by the individual VEC units in each suite. The VEC devices adjust electrical current limits only; they do not change the ratings or protective characteristics of the installed circuit breakers. All operating limits remain subject to applicable electrical codes and equipment ratings.*

How the System Works

Stage	What happens
1 · Measure	Two external Main CTs on the main bus or feeder conductors measure the total building current and are connected to the hub inputs CT1 and CT2.
2 · Distribute	The VEC-xHUB delivers the common feeder-current signal from its outputs (OUT1–OUT18) to each participating VEC unit through a control wire.
3 · Adapt	Each VEC unit receives the feeder signal on its CT3/CT4 inputs, combines it with its own suite measurement (CT1/CT2), and adjusts its allowable current limit. Loads are shed when the feeder approaches its limit and reconnected as capacity becomes available.

Under normal conditions, each suite's allowable current limit may start at 80% of its main breaker rating. As feeder demand rises, the VEC units reduce their limits (for example to 75% or 72%), down to a minimum adaptive current limit of **5 A**. As demand falls, the limits recover automatically, subject to each unit's priorities and reconnection delays.

Each VEC app shows the shared feeder current as **Bus 1** and **Bus 2**, below the suite's own **Line 1** and **Line 2** currents.

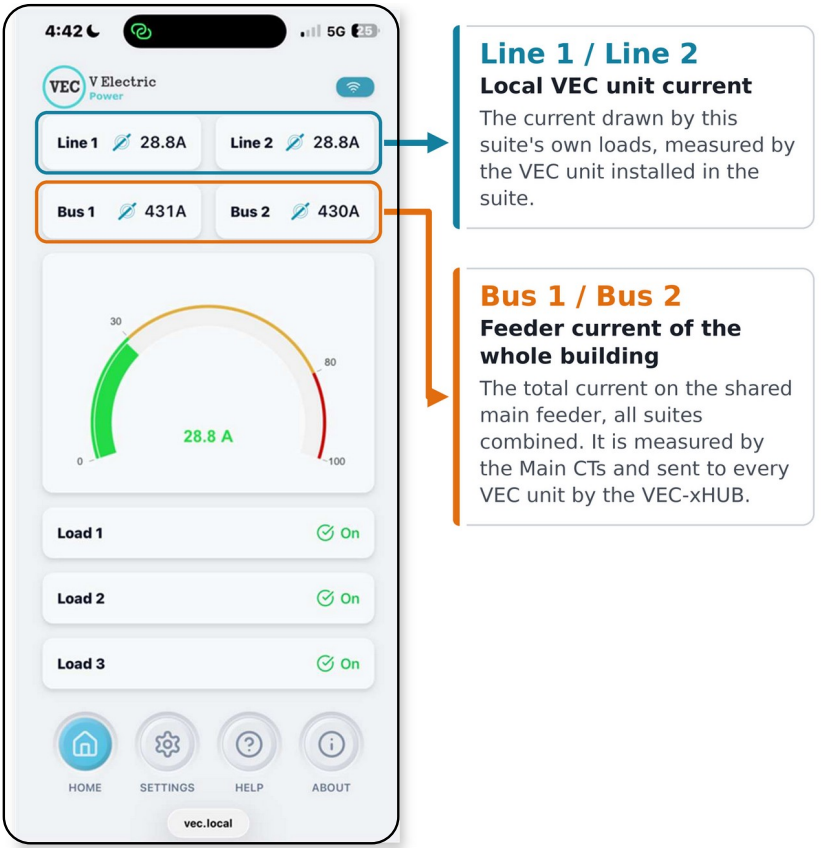


Figure 1 – VEC app home screen. Line 1 and Line 2 show the local VEC unit current; Bus 1 and Bus 2 show the feeder current of the whole building, received from the VEC-xHUB.

Technical Specifications

Parameter	Details
Model	VEC-xHUB (x = maximum supported VEC connections)
Electrical systems	120/240 VAC single-phase · 120/208 VAC three-phase · 60 Hz
Operating temperature	−30°C to +45°C (−22°F to +113°F)
Enclosure type	NEMA Type 1
Standard capacity	Up to 18 VEC units; expandable if required
Main feeder monitoring	External CTs on main bus or feeder conductors
Typical CT ratings	200 / 400 / 600 / 800 / 1000 / 1250 A*
Interface and outputs	Dedicated on-board VEC interface; 18 outputs (OUT1–OUT18) in standard configuration
Unit monitoring	Each VEC monitors unit current while receiving the shared main-feeder signal
Adaptive load control	Automatically adjusts unit current limits according to feeder capacity
Minimum adaptive current limit	5 A
Capacity recovery	Automatically restores allowable limits as capacity becomes available
Applications	Row homes and condominiums

** CT sizes are selected to suit the installation. Specifications and available configurations should be confirmed for the supplied model. Voltage ratings refer to the supported electrical system, not the hub's optional 24 VDC supply.*

Model Number

VEC-xHUB – where **x** is the maximum number of VEC units the hub supports. The standard configuration supports up to 18 VEC units (OUT1–OUT18). Larger configurations are available on request.

Feeder Protection also requires one **VEC Load Control and Feeder Protection** unit in each participating suite.

System Components and Hub Connections

A complete feeder protection system consists of:

Component	Qty	Function
VEC-xHUB	1 per shared feeder	Measures the main feeder current and distributes the feeder signal to all VEC units
Main CTs	2 (CT1 & CT2)	Installed on the main bus or feeder conductors; sized to the feeder (200–1250 A)
VEC unit	1 per suite	Measures suite current with its own CT1/CT2, receives the feeder signal on CT3/CT4, and controls the suite's load(s)
Control wire	1 per suite	Connects one hub output (OUTn) to the CT3/CT4 terminals of one suite VEC

Hub Terminals

Hub terminal	Connect to
INPUT – CT1	Main CT1 (main feeder, Bus 1)
INPUT – CT2	Main CT2 (main feeder, Bus 2)
OUT1–OUT18	Control wire to the CT3/CT4 terminals of each suite VEC, one output per suite
Power supply (24 VDC) – optional	Needed only to monitor the main feeder current (CT1 and CT2) at the hub. Not required for CT signal distribution to the suite VEC units.

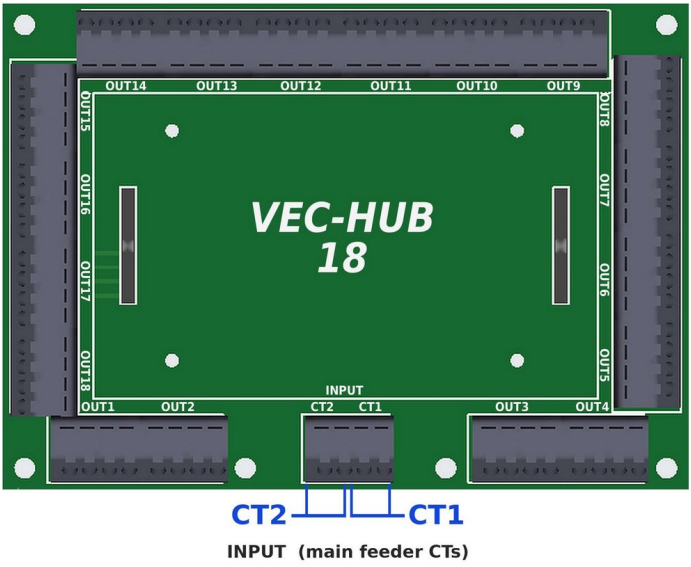


Figure 2 – VEC-xHUB module (product illustration): INPUT terminals for the Main CTs and OUT terminal blocks for the suite VEC units

Typical Installation Diagram

The figure below shows a typical 8-unit installation: the two Main CTs on the main feeder ahead of the meter base / splitter (or at another suitable location that measures the total building current), the VEC-xHUB, and one VEC unit per suite feeding an EV charger or an air conditioner (any load can be connected). Suites 2 to 7 use the same connections as Suites 1 and 8.

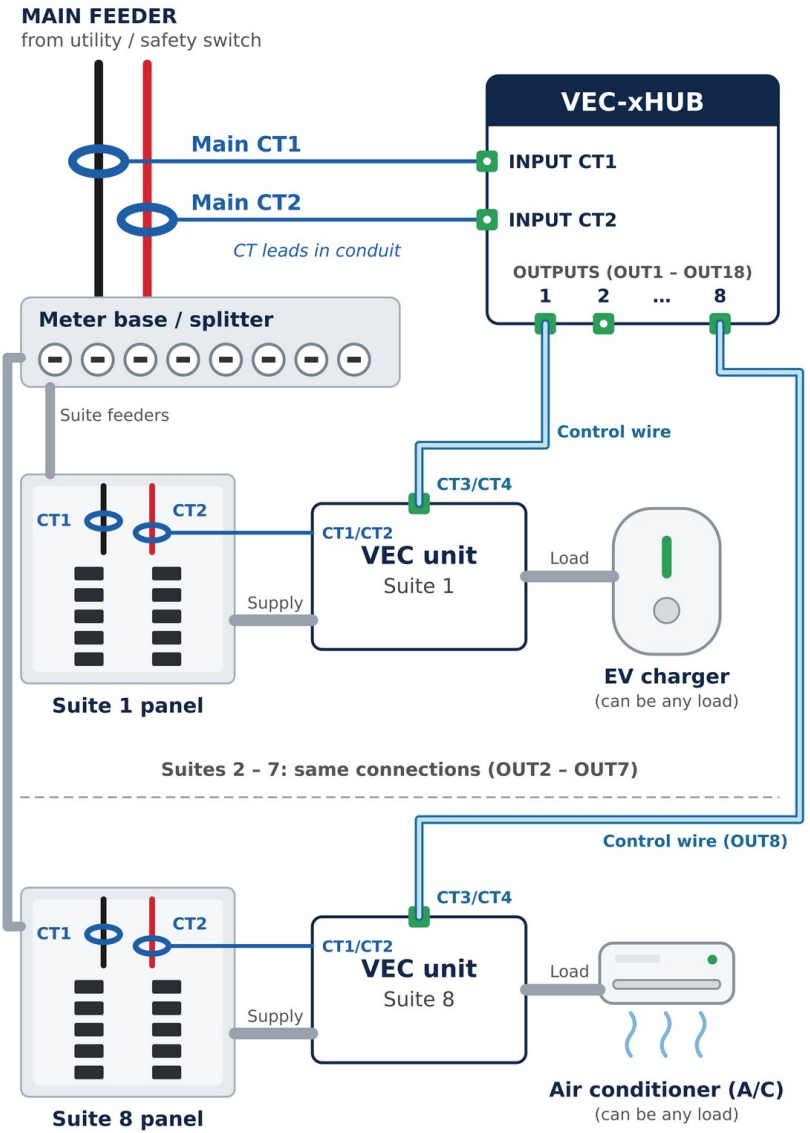


Figure 3 – Typical VEC-xHUB installation (8 suites): Main CT1/CT2 on the feeder to hub CT1/CT2; hub outputs 1–8 by control wire to each suite VEC's CT3/CT4

Installation Steps

Step 1: Plan the Installation

- Confirm that each participating suite has a VEC Load Control and Feeder Protection unit, installed and set up as in **Part A** of the VEC Installation Manual.
- Confirm the main feeder / main bus rating and select Main CTs of the matching size (200, 400, 600, 800, 1000 or 1250 A).
- Assign one hub output to each suite (for example OUT1 = Suite 1, OUT2 = Suite 2 ...) and record the assignment.
- Plan the routes of the CT lead conduit (Main CTs to hub) and the control wires (hub to each suite VEC).

Step 2: Mount the VEC-xHUB

- Select a dry, indoor location near the meter base / splitter, protected from moisture, dust, extreme temperatures and direct sunlight, and within the operating temperature range of the supplied model.
- Ensure the location is easily accessible for maintenance.
- Secure the hub enclosure to the wall using suitable anchors and screws.

Step 3: Install the Main CTs on the Feeder

- **De-energize the main feeder** at the utility disconnect / safety switch before installing CTs.
- Install **Main CT1** around the line 1 feeder conductor(s) and **Main CT2** around the line 2 feeder conductor(s), ahead of the meter base / splitter or at any other suitable location where they can measure the total current of the whole condominium or multi-family building. All suite loads must be downstream of the CTs. See the typical installation diagram.
- Install both CTs in the **same orientation** (same direction relative to the current flow) for accurate readings.
- Use CTs rated for the feeder current. Never use CTs rated lower than the feeder rating.

Step 4: Connect the Main CTs to the Hub

- Run the Main CT leads to the hub in conduit (CT lead conduit, length as required).
- Connect Main CT1 to hub **INPUT CT1** and Main CT2 to hub **INPUT CT2**.

- Each CT cable has one red and one black wire (on some CTs the red wire is white). Terminate both CTs using the same wiring pattern.
- If CT leads are too short, extend them with a minimum 18 AWG, 300 V shielded cable or equivalent, and use strain-relief connectors.

Step 5: Run the Control Wires to Each Suite VEC

- Run one control wire from each hub output to its assigned suite: **OUT1** to Suite 1, **OUT2** to Suite 2, and so on.
- For each VEC-xHUB output (1–18), use two pairs of 22–24 AWG twisted-pair copper cable, such as CAT6, to connect to the corresponding VEC unit's CT3 and CT4 inputs. Larger conductor sizes may also be used. Shielded cable is recommended where electrical interference is a concern.
- Label both ends of every control wire with the suite number and hub output number.
- Keep control wires separated from power conductors where possible.

Step 6: Power Up

- Energize the VEC units in each suite to allow configuration and setup.
- The VEC-xHUB does not require an external power supply for CT signal distribution, as the signals from Main CT1 and CT2 are routed directly to the corresponding VEC units through outputs 1–18.
- The VEC-xHUB's 24 VDC power supply is required only when local monitoring of the shared main feeder current is desired in the electrical room.
- Verify that the Power LED is ON on each VEC unit.

Step 7: Configure Each Suite VEC for Feeder Protection

At each suite VEC, follow **Part B** of the VEC Installation Manual:

1. Open the VEC app and press and hold **ABOUT** for more than 5 seconds to open **Advanced Configuration**.
2. Under **Installation Type**, select **Row House / Condo**.
3. Set **Bus CT Rating** to the rating of the Main CTs installed on the feeder (for example 600 A).
4. Check **Bus Measurement Overload** (instantaneous shutdown limit, default 150%) and **Bus Feedback Kp** (default 5).
5. Press **Save Changes**, then press **Save Settings** on the Settings page.

> **Important:** The Bus CT Rating must be the same on every suite VEC connected to the same hub, and must match the Main CTs actually installed on the feeder.

Step 8: Verify Operation

- On each suite VEC app, check that **Bus 1** and **Bus 2** show the feeder current and that the readings are the same on all suites.
- Check that **Line 1** and **Line 2** show the suite's own current.
- Check that **LED 3** (CT status) on each VEC is **OFF**.
- Record the readings and the hub output assignment for the building's records.

Commissioning Checklist

Check	Done
Each suite VEC installed and set up (Part A)	☐
Main CT1 and Main CT2 installed in the same orientation, rated for the feeder	☐
Main CTs connected to hub INPUT CT1 / CT2	☐
One control wire per suite, hub OUTn to VEC CT3/CT4, labelled at both ends	☐
Hub 24 VDC power supply connected (only if monitoring is used)	☐
Each suite VEC set to Row House / Condo, Bus CT Rating = Main CT rating	☐
Save Changes and Save Settings pressed on every VEC	☐
Bus 1 / Bus 2 readings correct and identical on all suites	☐
LED 3 (CT status) OFF on all VEC units	☐

Troubleshooting

Symptom	Possible cause	Action
Bus 1 / Bus 2 show 0 A on one suite	Control wire not connected	Check the control wire from the hub output to that VEC's CT3/CT4 terminals
Bus 1 / Bus 2 show 0 A on all suites	Main CTs not connected to the hub	Check the Main CT connections to hub INPUT CT1/CT2
Bus readings differ between suites	Different Bus CT Rating settings, or wiring fault	Set the same Bus CT Rating on all VEC units; check control wiring
Bus reading much higher or lower than expected	Bus CT Rating does not match the installed Main CTs	Correct the Bus CT Rating
LED 3 blinking on a VEC	A CT or control wire is not connected	Check CT1/CT2 and the CT3/CT4 control wire on that VEC
Loads switch off frequently	Feeder near capacity, or Bus Feedback Kp too high	Review feeder demand; keep Kp at the default unless advised by V Electric Power

Warranty

Limited Two-Year Warranty

- This unit is warranted to the original purchaser to be free from defects in materials and workmanship for two years from the date of purchase, without additional charge.
- The warranty is automatically void for incorrect installation or installation by unauthorized personnel.
- V Electric Power Inc. will not be liable for any damages, delays, or transportation costs associated with defective devices.
- V Electric Power Inc. will not be responsible for any indirect damages or delays resulting from faulty workmanship or materials.
- All repairs and services must be performed at V Electric Power Inc.'s facility. V Electric Power Inc. will not cover any costs for repairs or replacements made by the customer.

Limitation of Liability

By installing or using the VEC-xHUB, the installer and building owner accept the following.

- **Qualified installation.** Work must be done only by a certified electrician. V Electric Power Inc. is not responsible for loss or damage resulting from work by unqualified persons.
- **Design and code compliance.** The installer and the building's electrical designer are solely responsible for the electrical design (feeder sizing, load calculations, CT selection, breaker and conductor ratings) and for CEC / NEC and local code compliance.
- **Not a protective device.** The VEC-xHUB and VEC units manage load only. They are not breakers, fuses, or overcurrent, ground-fault or arc-fault protection, and they do not replace or alter them.
- **No guarantee of outcome.** Operation depends on correct installation, wiring, settings and power. V Electric Power Inc. does not guarantee that overloads, breaker trips, outages or utility charges will be prevented.
- **Verification and connected equipment.** The installer must complete the Commissioning Checklist. V Electric Power Inc. is not responsible for damage to connected equipment such as EV chargers.
- **Modifications.** Modifying the product or using it contrary to this manual voids the warranty and releases V Electric Power Inc. from liability.
- **Limit of liability.** To the maximum extent permitted by law, the liability of V Electric Power Inc. is limited to the purchase price of the product, and it is not liable for indirect, incidental or consequential damages, including loss of use, revenue or profit.